

Exhibit "B"

Part 4 of 10

5.10 Biological Resources

Table 5-24
Sensitive Terrestrial Wildlife Species Occurring or Potentially Occurring in the SBMR/WAAF ROI

Scientific Name	Hawaiian Name/Common Name	Federal ¹ Status	State ² /Global ³ Status	Habitat	Date last Observed	Likelihood of Occurrence
Invertebrates						
<i>Achatinella apexfulva</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	1953	P
<i>A. byronii/decipiens</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	2000	C
<i>A. leucoraphe</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	1989	C
<i>A. tila</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	-	P
<i>A. mustelina</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	2000	C
<i>A. soverbyana</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	2000	C
<i>A. swifii</i>	pūpū kuahiwi, pūpū kani'oe, kāhuli/O'ahu tree snail	E	E/G1	Native Hawaiian shrublands, forests, and bogs above 1,000 feet (305 m)	1970's	P
<i>Amastrea cylindrica</i>	-/Amastrid land snail	SOC	-/G1	Areas with native vegetation, specific preferences not available	1966	P
<i>A. nicens</i>	-/Amastrid land snail	SOC	-/G1	Areas with native vegetation, specific preferences not available	2001	C
<i>A. spirizona</i>	-/Amastrid land snail	SOC	-/G1	Areas with native vegetation, specific preferences not available	1965	P
<i>Auriculella ambusta</i>	-/Achatinellid land snail	-	-/G1	Areas dominated with native vegetation	1986	C
<i>A. sp. aff. castanea</i>	-/Achatinellid land snail	-	-/G1	Areas dominated with native vegetation	1988	C
<i>A. sp. aff. perpallida</i>	-/Achatinellid land snail	-	-/G1	Areas dominated with native vegetation	1966	P
<i>Cookeconcha</i> spp.	-/Endodontid land snail	SOC	-/G1	Areas with native vegetation; specific preferences not available	-	P
<i>Drosophila aglaia</i>	-/picture-wing fly	P	-/-	Scattered in moist and wet forests	2003	C
<i>D. obatai</i>	-/picture-wing fly	P	-/-	Scattered in moist and wet forests	2003	C
<i>Hyleaenus unica</i>	-/unique yellow-faced bee	SOC	-/-	Subalpine forest	-	P
<i>Laminella sanguinea</i>	-/Amastrid land snail	SOC	-/G1	Areas with native vegetation, specific preferences not available	2000	C
<i>Leptachatina</i> sp.	-/Amastrid land snail	SOC	-/G1	Areas with native vegetation; specific preferences not available	-	P
<i>Lepachatina</i> sp. (O'ahu)	-/Amastrid land snail	SOC	-/G1	Areas with native vegetation, specific preferences not available	1965	P

5.10 Biological Resources

Table 5-24
Sensitive Terrestrial Wildlife Species Occurring or Potentially Occurring in the SBMR/WAAF ROI (continued)

Scientific Name	Hawaiian Name/Common Name	Federal ¹ Status	State ² /Global ³ Status	Habitat	Date last Observed	Likelihood of Occurrence
<i>Megalagrion oahuensis</i>	-/O'ahu megalagrion damselfly	SOC	-/G1	Breed in damp leaf litter	1958	P
<i>Parulina dubia</i>	-/Achatinellid land snail	SOC	-/G1	Areas dominated with native vegetation	1948	P
<i>Phoronoma sandwicheensis</i>	-/Helicinid land snail	SOC	-/G1	Areas with native vegetation; specific preferences not available)	1966	P
Birds						
<i>Asio flammeus sandwicheensis</i>	pueo/Hawaiian short-eared owl	SOC+	E*/G5T3	Pastures, grasslands, dry and wet forests that are dominated by either native or nonnative vegetation. Sea level to 7,900 feet (2,408 m).	1986	C
<i>Chasiempis sandwicheensis</i> <i>ibidis</i>	O'ahu 'elepaio/-	E, CH	E/G4T1	Native Hawaiian forest	2000	C
<i>Loxops coccineus</i> <i>wolstenholmei</i>	O'ahu 'akepa/-	-	-/G2	Montane 'ohi'a-koa forest above the 3,000 foot (914.4 m) level	1976	P
<i>Paroreomyza maculata</i>	'alauahio/O'ahu creeper	E	E/G1	Native Hawaiian shrublands, forests, and bogs	1976	P
<i>Vestiaria coccinea</i>	'i'iwi/Hawaiian honeycreeper	+	E*/G4	Native forests, especially 'ohi'a (<i>Metrosideros</i>) forest	1998	C
Mammals						
<i>Lasiorus cinereus semotis</i>	-/Hawaiian hoary bat	E	E/G5T2	Bare rock, cliff, hardwood forest, grassland/herbaceous, hardwood woodland, and riparian habitats.	1988	C

Sources: USARHAW and 25th ID[J] 2001a; HDLNR 2002a; HINHP 1994; R. M. Towill Corp. 1997b; PCSU 2001; NatureServe 2001; Virginia Tech 1998

Notes:

NCN = No common name

*The state endangered listing refers only to the populations on O'ahu, Lanai, and Molokai.

- Not yet recored within the SBMR/WAAF ROI

Status:

¹Federal:

E = Endangered

SOC = Species of concern

C = Candidate species for listing

CH = Critical habitat designated

or proposed for designation

+ = Birds of Conservation Concern

²State

E = Listed as endangered

/- = No Status

³Heritage Global Rank:

G1 = Species critically imperiled globally (typically 1-5 current occurrences)

G2 = Species imperiled globally (typically 6-10 current occurrences)

G4 = Species apparently globally secure

G5 = Species demonstrably globally secure

T1 = Subspecies critically imperiled globally (typically 1-5 current occurrences)

T2 = Subspecies imperiled globally (typically 6-10 occurrences)

T3 = Subspecies either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range, or because of other factors making it vulnerable to extinction throughout its range (21-100 occurrences).

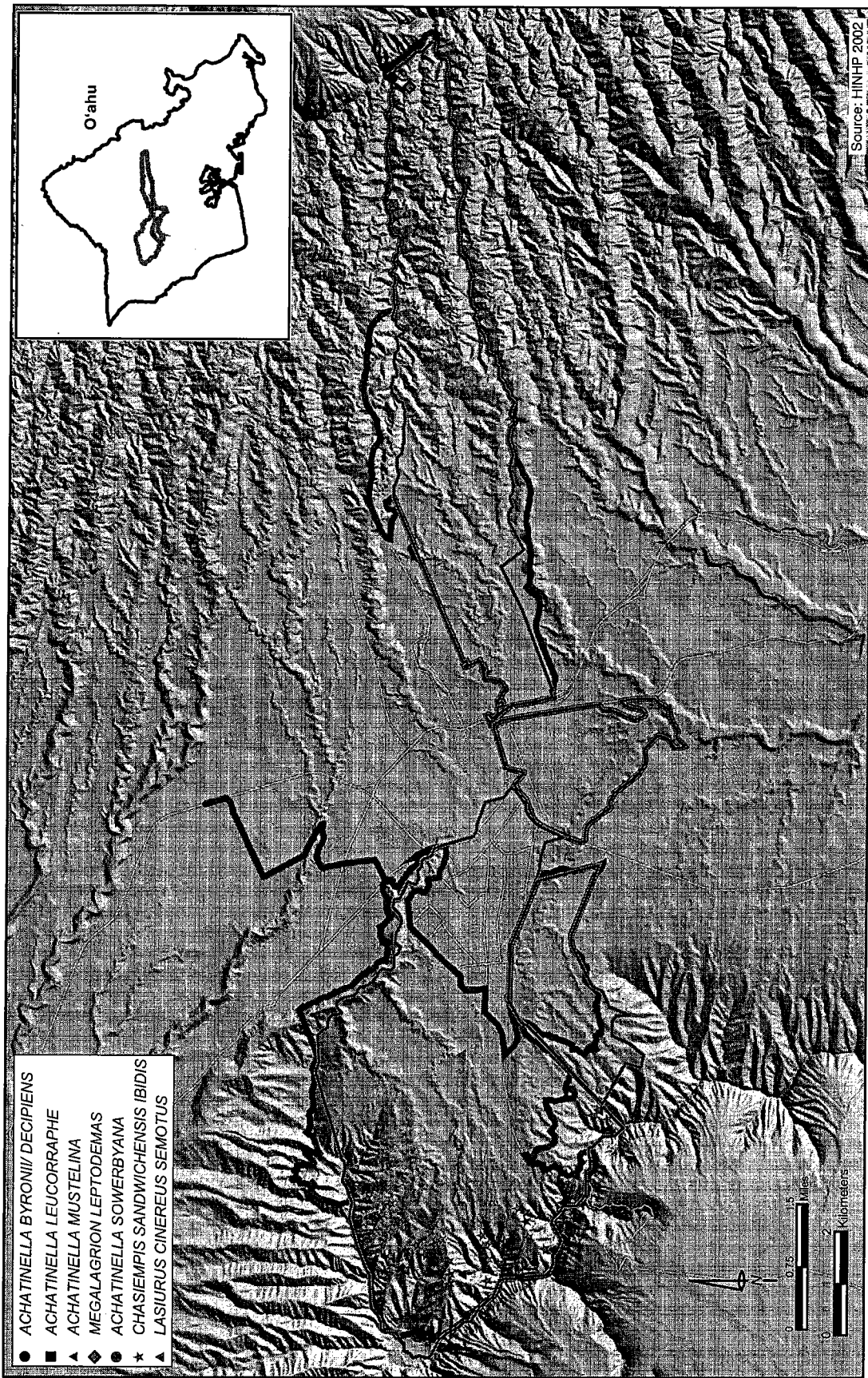
T4 = Subspecies apparently globally secure

Likelihood of occurrence on the project site

C = Confirmed

P = Potentially may occur

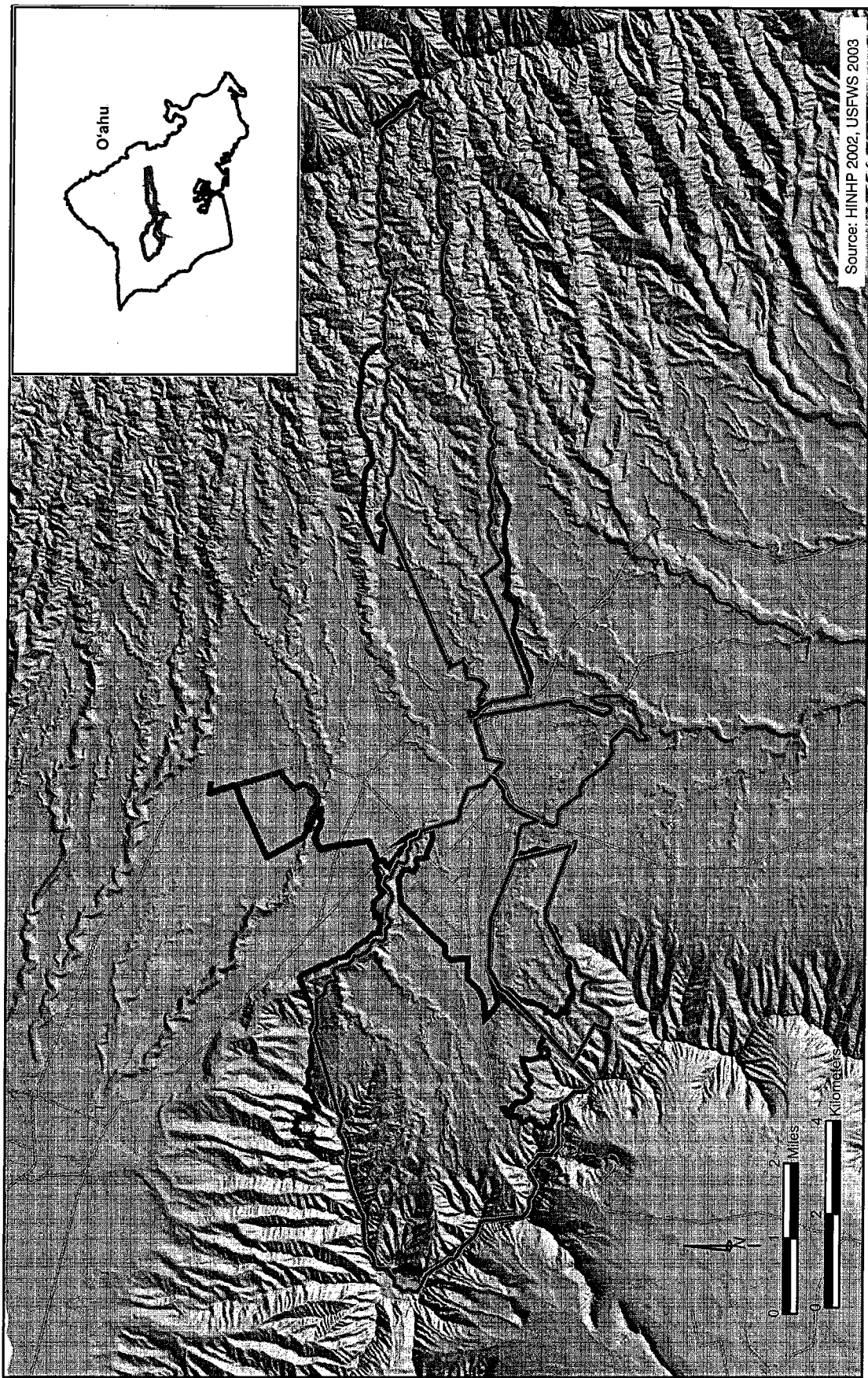
U = Unlikely to occur



**Sensitive Wildlife Species Occurring in the
Schofield Barracks Military Reservation
Region of Influence**

O'ahu, Hawai'i
Figure 5-37

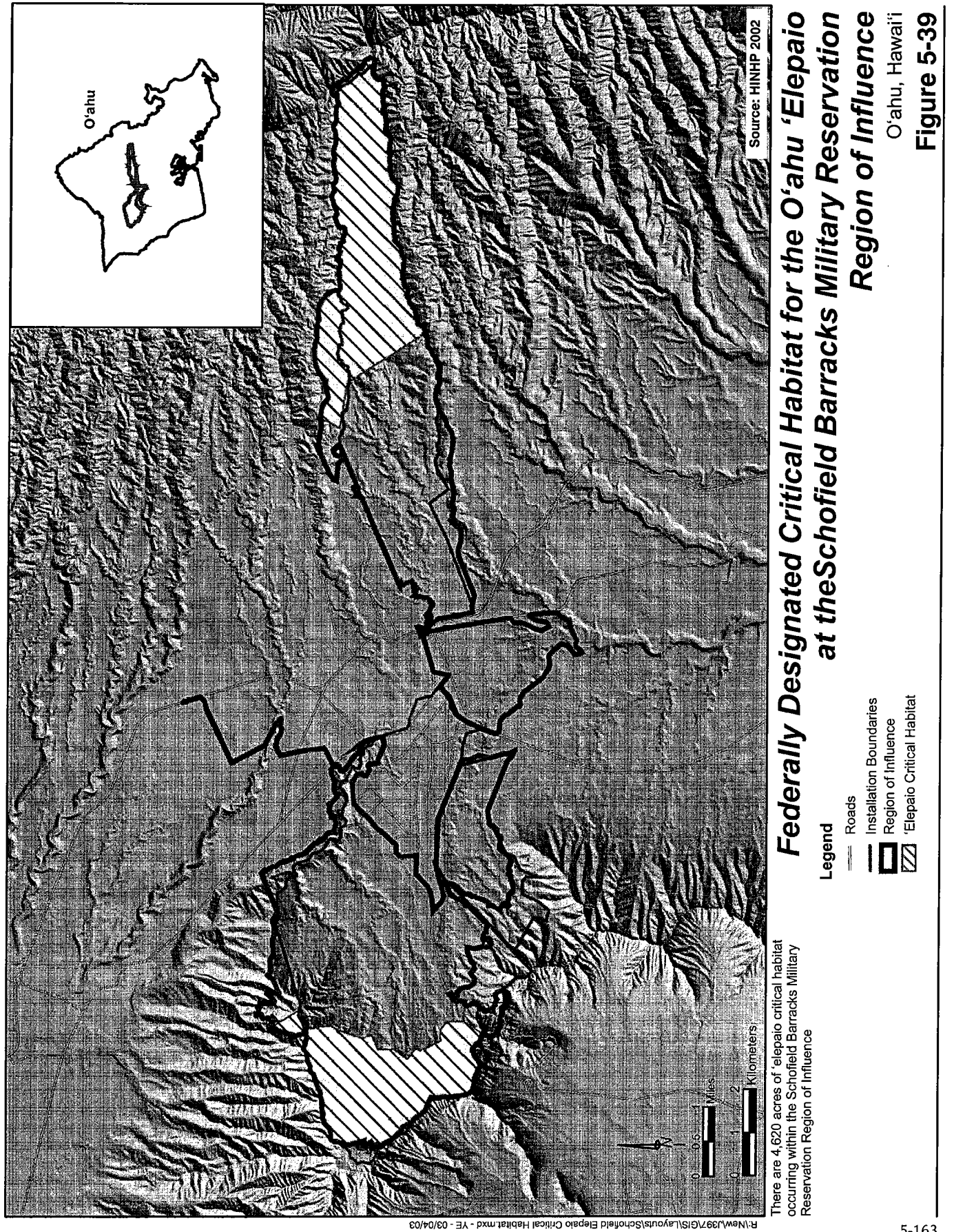
Seven sensitive wildlife species
have been recorded in the
Schofield Barracks Military
Reservation Region of Influence.



**Designated Plant Critical Habitat in the
Schofield Barracks Military Reservation
Region of Influence**
O'ahu, Hawai'i
Figure 5-38

There are 913 acres of designated plant critical habitat occurring within the Schofield Barracks Military Reservation Region of Influence.

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Ecologically Sensitive Areas

Surveys done under the HINHP show eleven native natural vegetation communities on SBMR. These zones are determined by climate, topography, elevation and prevailing ecological conditions. The HINHP considers two of these vegetation communities to be rare with a HINHP rank of G1: the O'ahu diverse lowland moist forest and Loulu Hiwa lowland wet forest (HINHP 1994).

Three ecological zones have been identified in the SBMR survey area. The wet summit crest zone exists in areas above 3,000 feet (914 meters), along the tops of the Wai'anae and Ko'olau Mountains. This zone contains the globally imperiled Loulu Hiwa lowland wet forest. Cliffs and moderate slopes are the topographically dominant features in this cool, wet cloud-swept region.

Below this is the moist ridges and cliffs zone, which is warmer and drier than the wet summit zone, though it does not escape the winds. The vegetation community on this part of SBMR supports 'ōhi'a lowland moist shrubland and Kāwelu lowland moist grassland; these communities are not considered rare and have a Global Heritage Ranking of G3.

The third ecological zone exists below the steepest cliffs and slopes described above and along the ridge tops to the gulch bottoms; this is the lowland forest zone. Typically warm and moist to wet, there are three forest types in this zone. The koa/'ōhi'a lowland moist forest is predominant on ridge tops and in lower elevations; 'ōhi'a lowland wet forests and uluhe lowland wet shrubland are the dominant native natural communities. O'ahu diverse lowland moist forests occur on north-facing, moderately steep slopes, are considered rare, and have a Global Heritage ranking of G1.

Biologically Significant Areas (BSAs)

SBMR contains large expanses of native-dominated plant communities. These areas are defined to prioritize areas for management based on their relative richness of rare natural resources. The Hawai'i Natural Heritage Program has defined three types of biologically significant areas for managing the important natural communities (Figure 5-40). They are described below.

BSA1 contains a high density of federally listed endangered, proposed endangered, or candidate species. There are three noncontiguous areas in the Wai'anae area of SBMR that have the BSA1 designation, and all three areas are habitat for the endangered land snail *Achatinella mustelina* and several endangered plants. The southernmost BSA1 is near Pu'u Hāpapa and the Honouliuli Preserve. It is the habitat for over 20 native and protected plant species, in addition to the endangered snail. This area is in the zone of proposed acquisition for the Army firing range (QTR2) at SBMR. The Ko'olau Mountain area of SBMR has two areas defined as BSA1. These areas are both in the eastern portion of the range, near the summit crest, and contain several species of endangered plants.

BSA2 contains all or some of the following: lower densities of federally listed endangered or proposed endangered species; candidate species or other species of concern that are expected to be upgraded to federal protected status within the next few years; and areas judged likely

to contain high densities of federally listed species, based on habitat assessment, despite the lack of any record of such occurrence to date. SBMR has two noncontiguous areas and one somewhat isolated area of habitat classified as BSA2. These regions contain typical vegetation for natural communities of moist ridges and cliffs and lowland forest zones. There is one BSA2 in the Ko'olau region of SBMR at East Range. It covers most of the eastern end of the range and is primarily a lowland forest. Most of the rare plants found in the Ko'olau range survey are in this area.

BSA3 contains stands of intact native vegetation with few or no known occurrences of rare elements. There is one BSA3 in the Wai'anae region of SBMR. There are no findings that support knowledge of natural communities in the area. Although there are no rare communities in the BSA3 area, the forest includes six native endangered plant species (*Cyanea grimseana*, *Gardenia mannii*, *Labordia cyrtandrae*, *Lycopodium nutans*, *Pteris lygatei*, and *Tetraplasandra gymnocarpa*). The BSA3 designated range in the East Range/Ko'olau region contains *Gardenia mannii* and *Cyanea longiflora* but no rare natural communities. It is likely that with further surveys of the areas additional rare plant occurrences would be documented.

Also found within the ROI is sensitive snail habitat. Although this habitat has not been federally designated or proposed as critical habitat it has been identified as containing the habitat requirements necessary for supporting the federally listed and snail species of concern on O'ahu. This area is shown in Figure 5-40.

5.10.2 Environmental Consequences

In response to the agency and public comments received during the Draft EIS comment period we reevaluated our analysis of the biological resources. As a result of considering these comments and of reanalyzing the available information, we recognize that the impact on biological resources from fire could not be mitigated to the less than significant level. However, these impacts will be substantially reduced as a result of mitigation.

Summary of Impacts

Biological resources that have been considered include vegetation communities, wildlife, sensitive species, and sensitive habitats. All biological resources have been assessed for potential impacts from project activities. (For a full description of the impact methodology used to determine impact on a resource, please refer to chapter 4.10. Only the resources potentially affected are included in this chapter; if a resource was determined not to be affected, it was not included for discussion.) A summary of impacts is provided in Table 5-25. Significant impacts would occur on sensitive plants and habitat from wildfires sparked by military training activities. Significant impacts mitigable to less than significant would occur from construction and training on sensitive species and sensitive habitat from training activities and from the spread of nonnative species introduced by construction and troop movements. Less than significant impacts would occur relating to general vegetation and habitat from training activities and construction, threats to migratory birds from the construction of FTI antennas, and noise and visual effects on wildlife from construction and training activities.